

REMARKS

The Final Office Action mailed June 18, 2007, has been received and reviewed. Claims 2 through 12 and 14 through 18 are currently pending in the application. Claims 2 through 12 and 14 through 18 stand rejected. Applicants propose to amend claims 3 and 12, and respectfully request reconsideration of the application as proposed to be amended herein.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 6,494,642 to Deardurff et al. in View of U.S. Patent No. 4,877,686 to Riou et al.

Claims 2 through 5, 8, and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Deardurff et al. (U.S. Patent No. 6,494,642) in view of Riou et al. (U.S. Patent No. 4,877,686). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Additionally, there must be "a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742, 167 L.Ed.2d 705, 75 USLW 4289, 82 U.S.P.Q.2d 1385 (2007). Finally, to establish a *prima facie* case of obviousness there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Furthermore, the reason that would have prompted the combination and the reasonable expectation of success must be found in the prior art, common knowledge, or the nature of the problem itself, and not based on the Applicant's disclosure. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006); MPEP § 2144. Underlying the obvious determination is the fact that statutorily prohibited hindsight cannot be used. *KSR*, 127 S.Ct. at 1742; *DyStar*, 464 F.3d at 1367.

The 35 U.S.C. § 103(a) obviousness rejections of claims 2-5, 8, and 9 are improper because the cited references do not teach all of the claim limitations.

Independent claim 3 has been amended to recite, in part: a coating layer on a print medium, wherein the coating layer comprises a polyhydroxylated material having at least two hydroxyl groups positioned for binding with the boronic acid dye; and an inkjet ink having a boronic acid dye for binding with at least one of the two hydroxyl groups in the coating layer.

Deardurff is drawn to an aqueous ink jet ink that includes an azomethine dye having a water solubilizing functional group attached thereto. The water solubilizing group includes use of boronic acids. However, as acknowledged by the Examiner, Deardurff does not teach or suggest a coating layer on a coated print medium that comprises a polyhydroxylated material.

Riou is drawn to a treated base material for recording sheets for ink jet printing. The coating includes a polyhydroxylic polymeric binder with hydroxyl groups. The coating is gelled or coagulated with boric acid or derivatives thereof during coating and with a filler having high absorption capacity. (See Abstract and Summary sections of Riou). As discussed in the Background of Riou, when printing on the layer of the recording sheets, defects are observed in the shape and uniformity of printing dots, which include migration of ink along fissures or hair cracks in the layer of the printing sheet, causing irregular shapes of dots. (See Riou, Col. 1, line 65 to Col. 2, line 12). To eliminate these defects, Riou proposes producing a coated printing sheet for ink jet printing to reduce hair cracks and improve ink jet printing. (Id. at Col. 2, line 13 to Col. 3, line 36). Riou teaches a sheet that, in the sheet, the polyhydroxylic polymeric binder has been gelled (or coagulated) by reaction with boric acid and/or its derivatives, which “has to take place during the coating operation” to form a “finished product (sheet).” (Id. at Col. 3, line 45 to col. 4, line 12). The two main constituents of the coating layer are the binder and the filler. (Id. at Col. 4, lines 20-24).

However, Deardurff and Riou do not teach each and every element of the pending claims. Deardurff does not teach or suggest a coating layer on a coated print medium that comprises a polyhydroxylated material having at least two hydroxyl groups positioned for binding with the boronic acid dye (as required in claim 3), having a polyhydroxylated compound having at least two hydroxyl groups on one molecule of the polyhydroxylated compound (as required in claims 4, 5, and 8), or having a polyhydroxylated material comprising at least two hydroxylated compounds, each hydroxylated compound having at least one hydroxyl group (as required in claim 9). In contrast, Riou teaches use of a polyhydroxylated material for use as a layer in a printing sheet, but does not teach or suggest an inkjet ink having a boronic acid dye. Instead, Riou teaches away from such a concept by teaching formation of a printing sheet that is coated with a layer formed from a polyhydroxylic polymeric binder that has been gelled (or coagulated) by reaction with boric acid and/or its derivatives, which gelling occurs during the coating operation, with addition of

fillers, to form a finished product (sheet). Thus, Riou teaches formation of a finished, coated printing sheet containing a coagulated layer formed from polymeric binders, fillers, and boric acid. As acknowledged in the Examples of Riou, once this finished printing sheet is formed, any type of ink can be used, since there is no subsequent reaction expected between the coated layer and the ink. Therefore, Riou teaches away from combining a coating layer having a polyhydroxylated material having at least two hydroxyl groups positioned for binding with the boronic acid dye, and an inkjet ink having a boronic acid dye for binding with at least one of the two hydroxyl groups in the coating layer. This type of reaction is not taught or suggested in Riou, since the printing sheet of Riou is a finished, coated sheet containing a coagulated layer wherein no further reactions take place.

The cited references also do not provide a motivation to combine because the combination of Riou, on the one hand, and Deardurff and Matsubara, on the other, would render the solubized ink of Deardurff, either alone or in combination with Matsubara, inoperable for its intended purpose. If a proposed modification would render the prior art invention being modified inoperable for its intended purpose, then there is no suggestion or motivation to make the proposed modification. M.P.E.P. § 2143.01.

In view of the foregoing, Applicants request that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to claims 4, 5, 8 and 9.

Obviousness Rejection Based on U.S. Patent No. 6,494,642 to Deardurff et al. and U.S. Patent No. 4,877,686 to Riou et al. and Further in View of U.S. Patent No. 5,380,612 to Kojima et al.

Claims 6, 7, 10, and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Deardurff et al. (U.S. Patent No. 6,494,642) and Riou et al. (U.S. Patent No. 4,877,686) and further in view of Kojima et al. (U.S. Patent No. 5,380,612). Applicants respectfully traverse this rejection, as hereinafter set forth.

Deardurff and Riou are as described above.

Kojima is relied upon as teaching at least two hydroxyl groups that are positioned on adjacent atoms and on non-adjacent atoms. However, the portions of Kojima cited by the Examiner describe a list of "solvents or dispersing media used in the preparation of a coating solution for the photoconductive layer of the invention." (Kojima at col. 8, lines 43-66). Therefore, Kojima does not cure the deficiencies of Deardurff and Riou, as described above,

namely, the lack of teaching or suggestion to provide a coating layer on the coated print medium comprising a polyhydroxylated material having at least one hydroxyl group positioned for binding with the boronic acid dye. In fact, Kojima teaches no subsequent reaction expected between a coated layer and ink. Therefore, like Riou, Kojima teaches away from combining a boronic acid dye with a polyhydroxylated coating layer.

In view of the foregoing, Applicants request that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to claims 6, 7, 10 and 11.

Obviousness Rejection Based on U.S. Patent No. 6,494,642 to Deardurff et al. in View of U.S. Patent No. 4,877,686 to Riou et al. and U.S. Patent No. 5,973,025 to Nigam et al.

Claims 12, 14 through 16, and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Deardurff et al. (U.S. Patent No. 6,494,642) in view of Riou et al. (U.S. Patent No. 4,877,686) and Nigam et al. (U.S. Patent No. 5,973,025). The Examiner also includes claims 13 and 20 in this rejection, but both claims 13 and 20 were cancelled in the amendment dated October 26, 2006. As to claims 12, 14 through 16, and 18, Applicants respectfully traverse this rejection, as hereinafter set forth.

Deardurff and Riou are as described above.

Nigam is relied upon as teaching “forming a covalent bond between the boric acid and the coating layer.” However, Applicants disagree with the Examiner’s reading of Nigam. Nigam teaches aqueous ink compositions that comprise an aqueous liquid vehicle, a colorant, and a binder material adapted to ionically or physically entrap the colorant. (See Nigam at Abstract and Col. 8, lines 51-58). As with Deardurff, Nigam does not teach or suggest a coating layer on a coated print medium that comprises a polyhydroxylated material. Nigam is limited to use of binders to form aqueous ink compositions. Additionally, Nigam does not describe, teach or suggest “forming a covalent bond between boric acid and a polyhydroxylated material on a coating layer”, since Nigam does not mention boric acid or coating layers at all. The only mention of covalent bonding relates to discussion of “colorants which tend to be immobilized on the selected resin, e.g., through covalent or ionic attachment.” (Nigam at Col. 9, lines 47-49). This, again, is in reference to colorants and resins (binders) that are contained within the aqueous ink composition being formed, and not a coating layer, as required by the claims.

In view of the foregoing, the combination of Deardurff and Nigam do not teach or suggest all of the claim limitations. As such, Applicants respectfully request withdrawal of the rejections to claims 12, 14-16 and 18.

Obviousness Rejection Based on U.S. Patent No. 6,494,642 to Deardurff et al., U.S. Patent No. 4,877,686 to Riou et al., and U.S. Patent No. 5,973,025 to Nigam et al. in Further View of U.S. Patent No. 5,380,612 to Kojima et al.

Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Deardurff et al. (U.S. Patent No. 6,494,642), Riou et al. (U.S. Patent No. 4,877,686), and Nigam et al. (U.S. Patent No. 5,973,025), in further view of Kojima et al. (U.S. Patent No. 5,380,612). Applicants respectfully traverse this rejection, as hereinafter set forth.

Deardurff, Riou, Nigam, and Kojima are as described above. As previously described, none of these references, either alone or in combination, describe, teach or suggest “forming a covalent bond between boric acid and a polyhydroxylated material on a coating layer.” In view of the amendments to independent claim 12, from which claim 17 depends, and the aforementioned arguments, Applicants respectfully request withdrawal of the rejections to claim 17.

ENTRY OF AMENDMENTS

The proposed amendments to claims 3 and 12 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search. Finally, if the Examiner determines that the amendments do not place the application in condition for allowance, entry is respectfully requested upon filing of a Notice of Appeal herein.

CONCLUSION

Claims 2-12 and 14-18 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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